PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

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ORDINARY MEETING.

WEDNESDAY, 19th January, 1955, at 5.30 p.m.

AGENDA.

1. Confirmation of the Proceedings of the Ordinary Meeting held on 1st December, 1954.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library. [See p. 48]
6. Nomination of Officers and Council for 1955.
7. Admission of Fellows.
8. Exhibits.

Fellows are particularly requested to bring suitable exhibits to the Meeting even though it may not be possible to announce their intention to do so beforehand.

> *Note.*—To avoid congestion in the Library and to enable exhibits to be displayed to greater advantage, a table has been placed in the meeting-room for this purpose. Fellows are asked to place their exhibits on this table with a suitable explanatory note, as soon as possible on the afternoon of the meeting, so that they are available for inspection there before the meeting opens.

9. Communications.

1. Mr. J. D. Bradley.

A Kodachrome film of Rennell Island, specially taken for the Society during a recent visit to the Solomon Islands. (15–20 minutes.)

[ABSTRACT]

Rennell Island is the southernmost of the smaller islands in the Solomons Group. It is an upraised coral atoll, with steep peripheral cliffs 300 to 500 ft. high, and is nearly 50 miles long and about 8 miles across. Although only approximately 100 miles from San Cristobal and Guadalcanal, the nearest of the

main islands in the Solomons group, it is separated from them by a deep of more than 5000 metres. To the west, however, the 300 miles of ocean between Rennell and the nearest island in the Louisiade Archipelago are comparatively shallow, which suggests that at one time Rennell may have had closer land ties with this archipelago. The little that is at present known of the Rennell fauna indicates that it is derived from the Papuan fauna (via the Louisiade Archipelago) and the Solomon Islands fauna, and shows a considerable degree of endemicity.

2. Professor V. G. Dethier (a visitor).

Techniques employed in studying the chemical senses of insects.

[Abstract]

Two short films will be shown which illustrate the techniques which have been employed in studying chemoreception at the Johns Hopkins University. The first depicts methods of rearing the black blowfly (*Phormia regina*), removing olfactory receptors, and testing tarsal sensitivity to solutions. The second film illustrates methods of demonstrating the sensitivity of the ovipositor of *Gryllus assimilis*, of measuring the sensitivity of swimming *Dytiscus* to compounds in solution, and of determining the olfactory thresholds of *Phormia regina* in a Hoskins-type olfactometer.

Tea will be served in the Library before the meeting.

NOTICES.

Papers submitted for publication in the *Transactions*.

The Publication Committee meets twice a year, usually on the first Wednesday in May and November, to consider papers offered for publication in the *Transactions*.

The attention of Fellows is drawn to the fact that papers offered for this journal must in future be in the hands of the Registrar one calendar month before the meeting.

The Society for Visiting Scientists.

The Council of the Society wishes to draw the attention of Fellows to the facilities provided by the Society for Visiting Scientists, which was established in the spring of 1944. The Society seeks to be a focus for all scientists visiting the United Kingdom, and to put them into touch with British scientists and with one another. It aims to provide and encourage an active exchange of scientific thought and discussion between scientists of the United Kingdom and scientists from overseas.

The House of the Society provides a meeting place, a refectory, a bar and some residential accommodation. In addition an information service is available for the use of all visiting scientists, so that any scientist arriving in this country can, if he wishes, proceed at once to the House and be given such advice and information as is available.

Among the Society's activities is the holding of receptions in honour of groups of scientists visiting Britain, who thus have an opportunity of meeting at the House their British and overseas colleagues. Informal discussion meetings of general interest to scientists are organised ; the Society provides a forum for topics which are outside the scope of specialised scientific societies but which are of importance to scientists as a whole.

Scientists from all countries are welcomed at the Society, which tries to assist its visitors in every way possible.

The annual subscription is three guineas, with an entrance fee of one guinea. Overseas postgraduate students in science holding research grants may become Student Associates, paying an annual membership fee of one guinea ; they pay no entrance fee. Other overseas members pay no annual subscription, but an entrance fee of five shillings.

Further particulars may be obtained from the Assistant Secretary, Society for Visiting Scientists, Ltd., 5, Old Burlington Street, London, W.1.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 1ST DECEMBER, 1954.

Professor P. A. BUXTON, C.M.G., F.R.S., President, in the Chair.

Present : 70 Fellows and 13 Visitors.

The Minutes of the Ordinary Meeting held on 3rd November were confirmed and signed by the President.

The President announced that the Darwin Medal of the Royal Society had been awarded to Dr. E. B. Ford.

The names of the following candidates for election were read for the first time : Dr. Carlos d'Andretta, Jr. ; Mr. Saiyid Abdul Aziz ; Mr. James T. Davey ; Miss Shahzaman Husain, M.Sc. ; Mr. Maheshwari Prasad Singh ; Mr. Bryan David Smith ; Mr. Gerald Ernest Woodroffe.

For the second time (taken as read) : Mr. Charles Gilbert Benson ; Mr. John Edward Vivian Davis ; Mr. John Bernard Ford, B.Sc. ; Miss Elizabeth Helen Hayton ; Mr. Graham Stuart Lawrence ; Mr. Kenneth Oldham ; Mr. William Alexander Sands, ; Mr. Michael Service ; Mr. Kenneth Charles Side ; and Mr. Lionel Roy Taylor.

The Secretary announced that the following had been elected Honorary Fellows of the Society : Professor J. Chester Bradley, Cornell University, Ithaca, N.Y., U.S.A. ; Professor C. Lindroth, University of Lund, Lund, Sweden ; Dr. R. C. L. Perkins, F.R.S., Woodcot, Lustleigh, Newton Abbot, Devon ; Dr. Hugh Scott, F.R.S., Ancastle Cottage, Gravel Hill, Henley-on-Thames, Oxon.

The Secretary read the names of the following newly elected Ordinary Fellows of the Society : Mr. Nazir Ahmad, Government College, Jhang, Pakistan ; Mr. George James Ashby, 14, The Ridgeway, Kingsbury, London, N.W.9 ; Professor C. M. Biezanko, Escola de Agronomia Eliseu Maciel, Pelotas, R.G.S., Brazil ; Mr. Ian Arthur David Byres, 11, 22nd Street, Kuwait Oil Co., Ahmadi, Kuwait, Persian Gulf ; Mr. Hahn W. Capps, Entomology Research Branch, United States Department of Agriculture, Washington 25, D.C., U.S.A. ; Professor R. E. Crabill, Department of Biology, St. Louis University, 1402, S. Grand Blvd., St. Louis 4, Missouri, U.S.A. ; Mr. Michael Peter Gooseman, 41, Westfield Road, Barton-on-Humber, Lincs. ; Mr. Sat Prakash Gurwara, 27, Man Nagar, New Delhi, India ; Mr. Joseph Arthur Hardman, Entomology Section, National Vegetable Research Station, Wellesbourne, Warwick ; Mr. Richard Owen Hughes, Bodlondel, Talybont, Near Bangor, Caernarvonshire ; Professor Alexander Barrett Klots, Department of Biology, The City College, 139 Street & Convent Avenue, New York City, N.Y., U.S.A. ; Mr. Guido G. Lanfranco, 3, New Street, Sliema, Malta, G.C.; Mr. Ivor Lansbury, Desert Locust Officer, c/o Desert Locust Control, Deridawa, Ethiopia; Mr. Philip Makings, Imperial College Field Station, Silwood Park, Sunninghill, Berks.; Mr. Michael Hill Robinson, 50, Oakwood Drive, Fulwood, Preston, Lancs.; Mr. Michael Anthony Salmon, 43, Melbury Court, Kensington, London, W.8; Mr. Geoffrey George Edgar Scudder, 3, Six Acre Cottages, Fawkham, Dartford, Kent; Dr. Ian Walter Boothroyd Thornton, University College of Khartoum, Sudan; Dr. Erach Jehangirji Vevai, 17A–9, Rustom Bag, Victoria Road, Byculla, Bombay, 27, India.

Thanks were voted to donors of gifts to the Library since the last meeting.

The Secretary read for the first time the following names of Fellows nominated by Council to serve as Officers and Council for 1955: *President.*—Dr. W. J. Hall, C.M.G., M.C. *Treasurer.*—Dr. N. E. Hickin. *Secretary.*—Mr. E. B. Britton, M.Sc. *Editor.*—Mr. J. Balfour-Browne, M.A.

Other Members of Council.—Dr. C. H. Andrewes, F.R.S.; Mr. R. F. Bretherton, C.B.; Professor P. A. Buxton, C.M.G., F.R.S.; Dr. G. H. L. Dicker; Mr. Paul Freeman; Mr. A. E. Gardner; Dr. H. B. N. Hynes; Miss D. J. Jackson; Mr. R. W. Lloyd; Mr. W. H. Potts; Dr. K. Mellanby, C.B.E., M.A.; Mr. F. T. Vallins; Dr. H. B. Williams, Q.C.

Alternative nominations, supported by four properly qualified Fellows of the the Society, should reach the Secretary before the meeting to be held on 19th January.

Sir Eric Ansorge, Mr. J. F. D. Frazer, Miss B. E. Harris and Mr. J. H. Stevenson, signed the Obligation Book and were admitted Fellows of the Society.

Professor P. A. Buxton gave a brief account of *Nemopalpus* (Psychodidae: Diptera). He said these insects were regarded as extremely rare. Recent work (Fairchild, 1952, *Ann. ent. Soc. Amer.* **45**: 259–280) shows that they may be common. Adults rest by day in dark humid spots, e.g., among buttress roots in tropical forest. Some of the morphological characters are perhaps very primitive. The exhibit comprised adult *N. arroyi* de Leon, and photographs of its resting places, at about 5000 feet in Western Panama.

Professor Buxton also called attention to a copy of the *Journal of the Royal Horticultural Society* for October 1954 showing an illustration of the case of insects with an inscription which had been presented by our Society to the Royal Horticultural Society on the occasion of their 150th Anniversary.

Mr. T. R. E. Southwood exhibited some examples of convergence in the Mirid subfamilies Orthotylinae and Phylinae. He outlined the differences between these subfamilies and drew attention to the marked convergence between the sexually dimorphic Orthotyline *Mecomma* Fieber and the Phyline *Orthonotus* Stephens, both of which had similar habitats. Recent work by Dr. J. C. M. Carvalho and himself on the world species of the genus *Cyrtorhinus* Fieber had shown that this genus contained species belonging to both the Orthotylinae and the Phylinae; thus this is a further case of convergence. The full details of this work would be published

Mr. W. V. Harris exhibited and spoke on some termites recently collected in Hamburg. He said soldiers and workers of the termite *Reticulitermes flavipes* (Kollar) were collected on 18th November at Hamburg-Altona, in garden soil, two inches below the surface, after three nights in succession when the air temperature approached zero. They were feeding on fence timber and scraps of wood. Other specimens were taken from windowsills and door-frames in basement dwellings and in a hospital.

Though first described by Kollar in 1837 from greenhouses at a royal palace near Vienna, this termite is, in fact, North American. It was discovered in Hamburg in 1937 by Dr. H. Weidner, in pieces of timber lying in tunnels built to distribute hot air in a municipal central heating scheme. It was not unnaturally assumed that there was a direct connection between the warm situation and the temperature needs of the insect. This has been disproved by the later discovery of *R. flavipes* in two distinct localities in Hamburg, in the soil of gardens as well as in the timbers of houses not well heated.

The variety *santonensis* of the Mediterranean termite, *Reticulitermes lucifugus*, occurs in the La Rochelle-Rochefort area to the north of the limits of ordinary *lucifugus*, and has recently been found to be established in Paris. *Santonensis* is a serious pest of buildings.

There would appear to be no pronounced climatic barrier to the establishment of termites of the genus *Reticulitermes* in the British Isles.

Professor O. W. Richards exhibited some new wingless African flies of the family Sphaeroceridae. He said that since an account was given to the Society of the wingless members of this family a very large new consignment had been received which included several new genera, specimens of two of which were exhibited.

Mr. A. E. Gardner exhibited: (1) Exuviae and a female imago of the African dragonfly *Orthetrum stemmale capense* (Cal.), bred from eggs obtained from a female at the River Namungongo, Mengo Province, Uganda, by Dr. P. S. Corbet, on 4th June, 1954. The eggs were kindly brought to this country by Dr. N. E. Hickin, who flew back from Uganda the following day. Kept at an average water temperature of 85° F., the eggs hatched on 24th June, the 12th and final larval instar was reached on 14th August, and the imago emerged on 17th September.

(2) A male specimen of *Oxygastra curtisii* (Dale) taken at Hurn, Hants., on 18th July, 1954, and a female from the same locality taken on 13th July, 1952. A live final instar larva was exhibited, bred from eggs obtained from the female. The eggs deposited on 13th July, 1952, hatched on 4th August. The 14th and final larval instar was reached on 2nd September, 1954.

(3) Male and female imagines and exuviae of *Sympetrum striolatum striolatum* (Charp.) from Surrey; a male, female and exuviae of *Sympetrum nigrescens* Lucas, bred from larvae taken by Mr. L. Christie at Skelbo, Sutherland, on 1st July, 1954, and a male and female *Sympetrum nigrifemur* (Selys) from Madeira. Drawings of the male and female genitalia were shown to illustrate the characters which prove that *S. nigrescens* and *S. nigrifemur* are good species. Mr. Gardner pointed out that previous authors had relied entirely on coloration when describing these dragonflies, hence *nigrifemur* was only given subspecific rank, and *nigrescens*, although described as a good species by Lucas (1912, *Entomologist* **45** : 171–172), has never generally been accepted but has been regarded as synonymous with *S. s. nigrifemur*.

Miss Longfield congratulated Mr. Gardner on establishing beyond doubt that *nigrescens* and *nigrifemur* were good species in the British Isles.

The Rev. C. E. Tottenham spoke on variation in the male secondary sexual characters of three African species of *Zyras* Stephens (Coleoptera : Staphylinidae). A fuller account, with illustrations, will appear in *Proceedings Series A*.

Dr. R. C. Rainey gave a preliminary account of the recent arrival of Desert Locusts in the British Isles. He said that, while neither the locust records nor the weather data relating to these arrivals were yet complete, the information so far available already provides considerable evidence of the origin and nature of this movement.

Up to mid-October the nearest recorded swarms were in southern Algeria and in Rio de Oro. On the 15th the Daily Weather Report of the Meteorological Office recorded the beginning of an unusually hot spell on the coast of southern Morocco, with offshore winds and temperatures up to 95° F. The same morning swarms appeared in the Canary Islands and further north-westwards over the Atlantic, and by nightfall groups of flying locusts were seen at sea as far north as the latitude of Gibraltar. Southerly winds were established at the time to a very unusual extent over much of the eastern Atlantic, associated with intense convergence at a frontal zone crossing the British Isles, which gave southern Scotland, for example, " its worst rainstorm within living memory " (*Times*, 19.x.1954) between the 15th and 18th. At the French ocean weather ship " Le Verrier " stationed about 700 miles west of Bordeaux, the southerly spell culminated in a full gale from S.S.W. on the night of the 16/17th ; and on the afternoon of the 17th two Desert Locusts (exhibited, still living, at this Meeting, as well as at the preceding one) were picked up at St. Martin's in the Scilly Islands, and another just offshore at Tramore, Co. Waterford. There were six further records from the Scillies, southern Ireland and Cornwall during the next fortnight, together with one (probably off a ship) from Bootle.

The 500 ft. trajectory of the air reaching the mouth of the Bristol Channel on the morning of the day on which the first locusts were taken (prepared by the Meteorological Office, Dunstable) indicates that this air had left the African coast in the vicinity of the Canaries 2½ days previously, *i.e.*, at an appropriate time and place to have brought the locusts up with it. Recent aircraft observations on the hour-to-hour movement of large Desert Locust swarms in eastern Africa have shown that the direction and speed of movement of these swarms also coincided closely with the trajectory of the air concerned. It has previously been shown (1952, *Proc. R. ent. Soc. Lond.* (C) **17** : 45–46) that such down-wind swarm movements, within the normal invasion area of the Desert Locust, can be expected to have, on balance, a marked survival value, by taking locusts towards zones of convergent winds and hence often towards areas of rainfall. Such a system would not, however, be an infallible one, since one would expect on this hypothesis that locusts near the limits of their normal distribution would from time to time be transported towards zones of convergence in areas unsuitable for locusts in other respects. The arrival of these locusts in the British Isles provides a particularly well-documented example of just such an effect, apparently produced by a mechanism essentially similar to that involved in the more usual swarm movements.

A short discussion followed in which Dr. Rainey said, in reply to an enquiry by Professor Buxton, that it was not established that locusts could alight and take off from water. He also said that locusts could not be assumed to have enough fuel to make a flight of this distance, but they could be airborne without sustained effort by air currents over the sea for quite long distances.

Mr. Dennis Leston exhibited mounts and slides of the antennae of Pentatomoidea and other Heteroptera. He said that in most bugs the antennae comprise scape, pedicel and bi-annulate flagellum : in some Hydrocorisae the flagellum is uni-annulate but in Hebridae a tri-annulate imaginal flagellum is obtained through division of the distal annulus at the final moult. In Pentatomoidea the antennae commonly consist of a scape, bi-annulate pedicel and bi-annulate flagellum. Following a suggestion from Dr. Pendergrast (*in litt.*) it has been shown that division of the pedicel occurs at the last moult, a phenomenon unreported previously in Insecta. In Phloeidae the antennae consist of scape, pedicel and single flagellar annulus only. No division of the basal flagellar annulus (meriston of Henson, 1947) has been detected during development in Heteroptera.

Baron C. G. M. de Worms exhibited :

(1) A series of *Maniola jurtina* f. *iernes* taken in the Burren of Co. Clare, Eire, in August of this year in company with Mr. R. E. Ellison. The form *iernes* was first named and described by the late P. P. Graves (1930, *Entomologist* **63** : 49). One of its chief features is the very pronounced orange patch on the upper-side of the fore wings of the males. This seems generally prevalent in all specimens and is sometimes extended to cover a large portion of the wings. The underside also in the males is as a rule much brighter than in English examples. The females have the orange patches on the upperwings very bright and clear-cut, with undersides equally brilliant. Some of these approach the form *splendida*.

(2) A series of *Eumenis semele* L. also obtained in the Burren, Co. Clare, in August last. This very brilliant and distinctive race has been named *clarensis*, though its validity has not yet been fully established. The main features are the very bright and clear-cut undersides of a blue-grey tint unlike any yet seen from Scotland or England. The upper sides of both sexes are also very brilliant with the orange patches very distinct.

(3) (On behalf of **Mr. R. Eldon Ellison**).—Two examples of the Noctuid Moth *Graptolitha lapidea* Hübner taken on 3rd and 4th October, 1954 in the moth-trap in his garden at Eastbourne, Sussex.

The first example of this species to be recorded in the British Isles was taken by the late Dr. K. G. Blair at Freshwater, Isle of Wight on 26th October, 1951. An account of his capture is given in the *Entomologist* **85** : 123, 1952.

Apparently the normal habitat of the species is southern Europe and its appearance in these northerly latitudes is of especial interest in view of the apparent northward trend of a number of southerly species in recent years.

The larva is said to feed on a number of kinds of cypress, including *C. macrocarpus*.

Dr. I. H. H. Yarrow made a short communication on the British subspecies of *Bombus agrorum* and their apparent relation to Continental forms. He said that of all the European Hymenoptera, *Bombus agrorum* shows the most clear segregation into geographic subspecies ; some 34 " forms " have been described, some of which have all the characteristics of subspecies, while others seem likely to be intergrades between overlapping subspecies. In the British Isles the species is represented by two distinct forms, a relatively pale one in Scotland and a much darker one in England, Wales and Ireland with an area of overlap, very imperfectly defined at the moment, but producing intergrades in N. Wales, N. Lancashire, Westmorland and N.E. Yorkshire. The Scotch specimens appear to belong to a group of subspecies which extends from Switzerland southwards to the extreme east end of the Pyrenees over which it passes into the Gerona Province of Spain and northwards to the N.W. of France and the Channel Islands. The more southerly British form is similar to that of mid-Europe. Neither British subspecies shows any affinity to those of Scandinavia, which closely resemble those of the Balkans.

Professor V. G. Dethier (a visitor) exhibited three photomicrographs of silver-stained sections showing the chemosensory hairs on the labellum of *Phormia regina* Meigen. Each hair possesses two central cavities, one with thin walls, the other with thick walls. The distal processes of two of the three neurons associated with the hair enter the thick-walled cavity and extend to the tip. The tip of the hair is sensitive to stimulation by sugars. These hairs and their associated cells act as sugar, water and tactile receptors.

The Honorary Secretary exhibited on behalf of **Mr. M. A. Hawes** a series of butterfly transfers made by him at Salak, North Perak, Malaya, in 1910, and called attention to the following advantages of this means of preserving the wing patterns of lepidoptera:

(1) The transfers could be very easily made if carefully done on suitable paper.

(2) They were perfect in that the most minute markings still showed, even after 44 years.

(3) One insect gives two separate pictures and even a damaged insect, one.

(4) Both upper and under side are shown at the same time.

(5) The whole of the British Butterflies could be shown in a very small volume and the colours do not deteriorate.

E. B. BRITTON, *Honorary Secretary.*

The next meeting (Annual Meeting) will be held on 2nd February at 5.30 p.m.

ADDITIONS TO THE LIBRARY.

Presented.

British Museum (Natural History). *Expedition to South-West Arabia* 1937–8. Vol. 1. No. 25. *Lepidoptera Rhopalocera* by A. G. Gabriel. No. 26. *Hemiptera*: REDUVIIDAE by N. C. E. Miller. 8vo. London. 1954. [Trustees of the British Museum.]

Böving, A. G. Mature larvae of the beetle-family ANOBIIDAE. *Dansk. biol. Medd.* **22** (2), 1954. [The Author.]

Jepson, W. F. *A critical review of the world literature on the lepidopterous stalk borers of tropical graminaceous crops.* Large 8vo. London. 1954. [The Author.]

Joly, F., *and others.* Les Hamada Sud-marocaines. Résultat de la mission d'étude 1951 de l'Institut Scientifique Chérifien et du Centre de Recherches sahariennes. *Trav. Inst. Sci. Chérifien* (Sér. gén.) **2.** 1954. [Institut Scientifique Chérifien and the Authors.]

Snodgrass, R. E. The dragonfly larva. *Smithson misc. Coll.* **123** (2). 1954. [Smithsonian Institution.]

Purchased.

Pavlovskii, E. N., *editor. Animal life of U.S.S.R.* Vol. 4. *Forest zone.* Large 8vo. Moscow and Leningrad. 1953. [In Russian.]

Schimitschek, Erwin. *Forstinsekten der Türkei und ihre Umwelt. Grundlagen der türkischen Forstentomologie.* 8vo. Prag. 1944.

In addition, separates have been presented by the Anti-Locust Research Centre; Mr. W. O. Steel; Professor T. W. Kirkpatrick; Mr. A. Ibbotson and Mr. C. A. T. Edwards; Dr. G. Arnold; United States Department of Agriculture; Miss D. J. Jackson; Rao Bahadur Y. Ramchandra Rao; Chief Entomologist, East African Tsetse and Trypanosomiasis Research and Reclamation Organisation; Professor J. Lane; Mr. W. B. Broughton; Dr. J. F. D. Frazer; Mr. B. Jobling; Dr. G. D. Morison; Ministerio de Agricultura, Venezuela; Mr. P. M. Miles; Mr. D. K. McE. Kevan; Rothamsted Experimental Station; Mr. P. A. Glick; Mr. P. T. Haskell; and Dr. Saadet Ergene.

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